DETAILED ACTION

Response to Amendment

This communication is in response to the RCE of 4/4/2008. All changes to the Claims have been entered. Accordingly, Claims 1-61 are currently pending in the application.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1, 4, 5-11, 16-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gitlin et al. (US 6018528), in view of Yano et al. (US 6563806), hereinafter referred to as Gitlin and Yano.

Regarding claim 1, 16, 28, 45 Gitlin discloses a communication system comprising:

a first wireless communication terminal (low-speed users D, K, N, P, R, S, T of figure 5) for performing a packet communication (communications transmission medium, column2 lines 58-60) with respect to said base station by using one carrier (low-speed users will be permitted to fill one or more of the available time slots 44 in a frame (one carrier), column 4 lines 88-23 and 50 of figure 5); and

a second wireless communication terminal (high speed users B, G, L of figure 5) for performing a packet communication with respect to said base station by using a plurality of carriers at the same time (higher-speed users can fill one ore more of the available frequency bands 42 (plurality of carriers) or time slots 44, col4 lines 20-23),

Gitlin however fails to specifically disclose the specific limitation of a base station and it's specific components. Gitlen however discloses of cellular communication systems that may use the concept described above (col1 lines 5-31) and it is well-known that a cellular communication system comprises a base station. In a similar endeavor, Yano discloses of such a system comprising a base station, a first wireless

communication terminal and a second wireless communication terminal (figure 1 and abstract). Yano further discloses of an allocation information applying section for applying allocation information for said first wireless communication terminal or said second wireless communication terminal when the carriers are allocated to either said first wireless communication terminal or said second wireless communication terminal (abstract and col4 lines 41-67 and col9 lines 34-43). Yano further discloses an allocation information storage section for storing thereinto said allocation information (col5 lines53- col6 line 7). It would thus be obvious to a person skilled in the art at the time the invention was made to incorporate the concept of optimizing spectral efficiency using time-frequency code slicing as disclosed by Gitlin into the system comprising a base station for assigning communication channels as disclosed by Yano in order to send data between base stations and user terminals in a efficient manner.

Regarding claim 2, 3, 29, 30, the combination of Gitlin and Yano, more specifically Yano discloses a wireless communication system as claimed in claim 1 wherein said allocation information storage section stores said allocation information in such a manner that said allocation information is arrayed in accordance with a predetermined sequence; and said allocation information applying means allocates said allocation information with respect to said first wireless communication terminal from one direction of said array, and also allocates said allocation information to said second wireless communication terminal from the other direction of said array (col5 lines 35-45).

Regarding claim 4, 31, the combination of Gitlin and Yano, more specifically Yano discloses having said allocation information storage section store the allocation information allocated to said wireless communication terminal as separate arrays (col5 line51-col6 line8 and col15 lines 25-56).

Regarding claim 5, 9, 17, 19, 21, 32, 38, 46, 50, 52, the combination of Gitlin and Yano, more specifically Gitlin discloses a wireless communication system as claimed in claim 1 wherein said packet communication is carried out by using a variable length packet (figure 4).

Regarding claim 6, 7, 10, 11, 18, 20, 35, 36, 39, 40, 49, 51 the combination of Gitlin and Yano, more specifically Gitlin discloses a communication system as claimed in claim 1, further time slot allocating section for allocating time slots which are used in packet communications by said first and second wireless communication terminals (as seen in figure 5), the time slot allocating section allocates one wireless communication terminal among said first and second wireless communication terminals to one unit of a time slot distribution used by said first (low-speed users D, K, N, P, R, S, T being allocated one time slot as seen in figure 5) and second wireless communication terminals in the packet communications every said carrier (high-speed user G being allocated to time slots across frequency bands f0 to f6 of figure 5). Gitlin further discloses allocation of first wireless communication terminal and second wireless

communication terminal be in an independent manner (independent transmissions, col8 lines 24-30).

It should further be noted that Yano discloses that in TDMA, carrier frequencies are used to transmit a frame, which includes multiple time slots having these carrier frequencies (col5 lines 5-13) thus the base station of Yano discloses a frame allocating section (figure 2).

Regarding claim 8, 37 the combination of Gitlin and Yano fails to specifically disclose allocating said first wireless communication terminal and said second wireless communication terminal in an alternate manner. However this would have been obvious to a person skilled in the art to alternate allocations between users, as this is simply a network parameter that may be chosen by the network/administrator. It should further be noted that this is simply a system design choice.

Regarding claim 22, 53 Gitlin discloses a wireless communication terminal for communicating with a base station apparatus which performs a packet communication with respect to both a wireless communication terminal for executing a packet communication by employing one carrier (low-speed users D, K, N, P, R, S, T of figure 5) and also another wireless communication terminal for executing a packet communication by employing a plurality of carriers (high speed users B, G, L of figure 5) at the same time (col4 lines 14-20) wherein said wireless

communication terminal judges a destination of a communication packet transmitted from said base station based upon said allocation information contained in a header of said transmitted packet so as to be communicated with said base station (col2 lines 35-41 and figure 4). It should be noted that it is well known in the art that destination addresses are allocated in a header of a packet for communication between source and destination.

Gitlin however fails to specifically disclose the specific limitation of a base station and it's specific components. Gitlen however discloses of cellular communication systems that may use the concept described above (col1 lines 5-31) and it is well-known that a cellular communication system comprises a base station. In a similar endeavor, Yano discloses of such a system comprising a base station, a first wireless communication terminal and a second wireless communication terminal (figure 1 and abstract). Yano further discloses of an allocation information applying section for applying allocation information for said first wireless communication terminal or said second wireless communication terminal when the carriers are allocated to either said first wireless communication terminal or said second wireless communication terminal (abstract and col4 lines 41-67 and col9 lines 34-43). Yano further discloses an allocation information storage section for storing thereinto said allocation information (col5 lines53- col6 line 7). It would thus be obvious to a person skilled in the art at the time the invention was made to incorporate the concept of optimizing spectral efficiency using time-frequency code slicing as disclosed by Gitlin into the system comprising a

base station for assigning communication channels as disclosed by Yano in order to send data between base stations and user terminals in a efficient manner.

Regarding claim 23, 25, and 27, 54, 60 the combination of Gitlin and Yano, more specifically Gitlin discloses a wireless communication system as claimed in claim 1 wherein said packet communication is carried out by using a variable length packet (figure 4).

Regarding claim 24, 26, 56, 59 Gitlin discloses a wireless communication terminal for communicating with a base station apparatus which performs a packet communication with respect to both a wireless communication terminal for executing a packet communication by employing one carrier (low-speed users D, K, N, P, R, S, T of figure 5) and also another wireless communication terminal for executing a packet communication by employing a plurality of carriers (high speed users B, G, L of figure 5) at the same time (col4 lines 14-20)

time slot allocating section for allocating time slots which are used in packet communications by said first and second wireless communication terminals (as seen in figure 5), the time slot allocating section allocates one wireless communication terminal among said first and second wireless communication terminals

to one unit of a time slot distribution used by said first (low-speed users D, K, N, P, R, S, T being allocated one time slot as seen in figure 5) and second wireless communication terminals in the packet communications every said carrier (high-speed user G being allocated to time slots across frequency bands f0 to f6 of figure 5).

wherein said wireless communication terminal judges a destination of a communication packet transmitted from said base station based upon said allocation information contained in a header of said transmitted packet so as to be communicated with said base station (col2 lines 35-41 and figure 4). It should be noted that it is well known in the art that destination addresses are allocated in a header of a packet for communication between source and destination.

Gitlin however fails to specifically disclose the specific limitation of a base station and it's specific components. Gitlen however discloses of cellular communication systems that may use the concept described above (col1 lines 5-31) and it is well-known that a cellular communication system comprises a base station. In a similar endeavor, Yano discloses of such a system comprising a base station, a first wireless communication terminal and a second wireless communication terminal (figure 1 and abstract). Yano further discloses of an allocation information applying section for applying allocation information for said first wireless communication terminal or said second wireless communication terminal when the carriers are allocated to either said first wireless communication terminal or said second wireless communication terminal

(abstract and col4 lines 41-67 and col9 lines 34-43). Yano further discloses an allocation information storage section for storing thereinto said allocation information (col5 lines53- col6 line 7). It would thus be obvious to a person skilled in the art at the time the invention was made to incorporate the concept of optimizing spectral efficiency using time-frequency code slicing as disclosed by Gitlin into the system comprising a base station for assigning communication channels as disclosed by Yano in order to send data between base stations and user terminals in a efficient manner.

Regarding claims 33, 34, 47, 48, 55, 58, 61 the combination of Gitlin and Yano, more specifically Yano discloses a wireless communication system as claimed in claim 28 wherein when said second wireless communication terminal performs the communication by using said plurality of carriers, said allocation information applying section allocates said single-carrier/multi-carrier allocation information to said second wireless communication terminal in a case that said multi-carrier/single carrier allocation information is unavailable (col2 lines 56-67 and col10 lines 1-12 and col12 lines 20-33).

4. Claims 12-15, 41-44, are rejected under 35 U.S.C. 103(a) as being unpatentable over Gitlin et al. (US 6018528), in view of Yano et al. (US 6563806), in further view of Krishnamoorthy et al. (US 2002/0051424), hereinafter referred to as Gitlin, Yano, and Krishnamoorthy.

Regarding claim 12-15, 41-44 the combination of Gitlin and Yano fails to specifically disclose having the time slot distribution determining section determine the time slot

distributions which can be used by said first wireless communication terminal and said second wireless communication terminal based upon a comparison result. Yano however discloses selecting a channel that meets the specified communication quality (col1 lines 34-40). Krishnamoorthy however discloses a method for assigning time slots to a user based upon user's data rate requirement, the actual data rate, and quality of service contracted for by the user. Krishnamoorthy further discloses that the assignment of the time slots within the frame is made dynamically (abstract and page 1 [0004]). It would have thus been obvious to a person skilled in the art at the time the invention was made to incorporate the concept of determining the time slot distributions which can be used by a user as disclosed by Krishnamoorthy, into the method of optimizing spectral efficiency using time-frequency code slicing as disclosed by Gitlin and Yano in order to efficiently determine the allocation of time slots to different users.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NGUYEN NGO whose telephone number is (571)272-8398. The examiner can normally be reached on Monday-Friday 7am - 3:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Firmin Backer can be reached on (571)272-6703. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Nguyen Ngo
United States Patent & Trademark Office
Patent Examiner AU 2663
(571) 272-8398
/Nguyen Ngo/
Examiner, Art Unit 2616

/FIRMIN BACKER/
Supervisory Patent Examiner, Art Unit 2616